INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

S-E-C-R-E-T
NOFORN

25X1

COUNTRY	Czechoslovakia	REPORT	
SUBJECT	Infrared Gun Sights	DATE DISTR.	13 September 1955
		NO. OF PAGES	3
DATE OF INFO.		REQUIREMENT NO.	RD
PLACE ACQUIRED		REFERENCES	25X1
DATE ACQUIRED		This is UNEVALUATED Information	

SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE

25X1

Artillery Sights

1. All Czech artillery batteries are to be equipped with a set of infrared sights. The characteristics of these sights are as follows.

2. To make the gun sights easily transportable, the source of electricity was chosen so as to be protected against breakage or spilling. The electric-power unit consists of alcalic battery cells. The protection against short circuit during transportation was achieved by contact valves which open only when the battery is in use. The hydrogen released from the solution can then go through these valves. The cells are provided with steel electrodes, one with the addition of chromium and the other of nickel. The casing is also of metal. The battery produces 24 V, with a capacity of 120 ampere hour. Every sight has a reserve battery.

3. The charging unit consists of a small two-cycle single-cylinder gasoline motor and a dynamo. The capacity of the dynamo is 75 Ah. The unit is equipped with a rheostat to control the charging current and with two measuring gauges voltmeter and ammeter.

4. The source of infrared rays is a VTU (Military Technical Institute-Vojensky technicky ustav)-Tesla tube, model V 212, input 500 W, which equals approximately 24 amperes. It was designed to obtain the darkest possible infrared rays, and various materials were tried for making the filaments. Bamboo fiber proved the most effective. However, since this particular fiber is very fragile, special carriers to protect the fiber from breakage were designed. These are shaped like a tube cut lengthwise, into which the bamboo fiber is pressed. The tube is made of elastic material. Most of the current flows through the filament. The material has a higher resistance, which means that its conductivity is lower than that of the filament. The filament has two large cylinder-shaped loops attached close to each other and is placed between two metal mirrors which concentrate the infrared rays. The valve is cylindrical with a round top and a bayonet socket.

S-E-C-R-E-T
NOFORN

STATE	ARMY	NAVY	AIR	FBI	AEC	OSI Ev				
X	X	X	X	X		x				

(Note: Washington distribution indicated by "X"; Field distribution by "#".)

INFORMATION REPORT INFORMATION REPORT

Approved For Release 2008/11/04 : CIA-RDP80-00810A007800080008-3

5. The ray is projected through a "tunnel", a tube 100 to 120 millimeters in diameter. The tunnel is equipped with projecting metal mirrors. The projector consists of the tunnel proper, i.e., a tube which can be set at different levels, and of two reflectors. One is below the tunnel at the focus of the infrared valve and the other in the bend of the tube at the upper end of the tunnel. The position of the upper reflector permits reduction or expansion of the range of vision. This is done by means of a connecting rod operating the mechanism which contracts or dilates the two concave parts of the reflector.

6. To the last part of the tube, that is the bend, an umbrella-shaped iconoscope antenna is fixed annularly round the tunnel with its inner side facing forwards. Two parallel tubes which are the bi-poles of the antenna are insulated. These bi-poles are connected by a screened conductor permanently mounted in a channel on the outer side of the projection tunnel. These screened conductors are connected by plugs in the sockets, placed in the joints of the adjustable parts of the tunnel. The projection is similar to that of the Braun tube. Pictures projected by this tube are far less clear than those obtained by oscillograph projection. The picture is projected only in silhouettes.

7. Besides the Braun tube (screen) this equipment has 8 plus 2 electronic tubes. The first 8 regulate, filter, and amplify. The other two act as rectifiers. The anode voltage of the Braun tube is 10 KV. Transformation to such high tension is done by a vibrator. The transformed voltage has two different tensions and is then rectified by the two above electronic valves. One is of the RX 500 type, the other XX 1501. The Braun tube is of the generally known model.

Aircraft Sights

8. The infrared aircraft sights are of the same type as described above, equipped with the same parts and the same set of electronic valves. The projecting screen of the Braun tube is however larger in diameter and the projected picture is double the size.

Sniper Sights

9. The infrared sniper sights are basically of the same design, but of miniature size, approximately the size of a small ship telescope. The sight is permanently fixed to the left side of the barrel casing, parallel with the sighting gears. The projecting screen is divided into sections with one horizontal line in the middle and several vertical lines. The vertical lines do not, however, reach the edge but go beyond the horizontal line only 10 millimeters on either side, with the exception of the central vertical line which runs from one edge of the screen to the other; the diameter of this small Braun tube is 50-60 millimeters. The electronic equipment for projection is on the chassis, which is in a watertight casing and can be attached separately to the sighting gear (a telescope) which is fixed permanently. The latter consists of a miniature infrared valve with a filament similar to that described above. The capacity of the valve is only one-fifth of that described above.

10. The complete electronic equipment consists of 5 plus 1 miniature electronic valves. These valves have steel cups with special bayonet shuttle teeth for plugging in. Each electronic valve is fitted in a socket on rubber and coil springs to protect the tubes against shock. The battery is transportable in a small case and connected by a steel-protected cable and a four-pole plug directly with the case of the projection telescope.

11. Since the above sight is used for small ranges (up to 3,000 meters), the picture is relatively clear, but again is only a silhouette projection. Details about the electronic valves are not available; they were produced in 1953 at the branch of the VTÚ, attached to the Tesla Plant in Prague-Hloubetin.

12. Contracting and widening of the range of vision is done by a sliding mirror-reflector the focus of which can be contracted or dilated by means of rings as in a telescope. The surfaces of the mirror are regulated by "coulisses"[1] which can be set by connecting rods to a certain range of vision. The "coulisses" consist of highly polished silver-coated reflecting surfaces. The range of vision can be set from 10 to 30 meters. The complete infrared sights including battery weigh about two kilograms.

1. [redacted] Comment: "Coulisse" probably means a sliding wing.

[redacted]